



U.S. Department  
of Transportation  
**Federal Highway**

**Administration**

400 Seventh St., S.W.  
Washington, D.C.  
20590

Refer to: HSA-1/WZ-87A

Mr. JAN MILLER  
EASTERN METAL/USA-SIGN  
1430 SULLIVAN STREET  
ELMIRA, NY 14901-1698

Dear Mr. MILLER:

Thank you for your facsimile transmissions of August 3 and August 21 requesting Federal Highway Administration (FHWA) acceptance of variations to a number of your company's portable sign stands using a variety of rigid sign panels as crashworthy traffic control devices for use in work zones on the National Highway System (NHS). You referenced the earlier testing, described the desired variations, and requested that we find your company's temporary sign stands acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features." This letter will deal with variations to the X-552 stand.

#### **Introduction**

The FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled "INFORMATION: Identifying Acceptable Highway Safety Features," established four categories of work zone devices: Category I devices were those lightweight devices which could be self-certified by the vendor, Category II devices were other lightweight devices which needed individual crash testing, Category III devices were barriers and other fixed or massive devices also needing crash testing, and Category IV devices were trailer mounted lighted signs, arrow panels, etc. The second guidance memorandum was issued on August 28, 1998, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This later memorandum lists devices that are acceptable under Categories I, II, and III.

A brief description of the device as initially accepted in our acceptance letters WZ-59 and WZ-78A follows:

**Model X-552b Mid-size dual vertical coil spring stand** tested with 48x48 signs: 0.080 aluminum and 2 mm AL/LDPE laminate sign substrates and 3 wood dowel flags.

The model **X-552b** "X-footprint" stand consists of four 25 mm x 25 mm x 2.0 mm (1.0 in x 1.0 in x 16 ga) steel tubing. Coil springs are used to attach the base unit to the steel upright. The stand's mast consists of 25 mm x 25 mm x 2 mm (1.0 in x 1.0 in x 16 ga) and 21 mm x 21 mm x 1.5 mm (0.81 [or 13/16] in x 0.81 in x 16 ga) telescoping galvanized steel tubing. The rigid sign is

attached to the mast tube by two formed steel brackets placed to capture the bottom and top points of the sign. The coil springs are rigidly attached with bolts on either end. Steel flag holders mount to the top sign bracket to support vinyl flags. Three 457 mm (18 in) square vinyl flags on 19 mm x 610 mm (0.8 in x 24.0 in) wooden dowels were placed in the steel holders.

The overall height of the **X-552b** stand is 2896 mm (114 in) with flags and 2388 mm (94 in) without flags. The bottom of the sign is 381 mm (15 in) above grade. The total weight of the stand is 16 kg (35 lbs). The 2 mm AL/LDPE laminate sign weighs 4.8 kg (10.5 lbs) while the 0.080 aluminum sign weighs 8 kg (18 lbs).

The **X-552b** sign stand is identical to the X-552a with the addition of a breakaway hole.

The X-552a stand has been accepted for roll-up, Endurance, and 10 mm corrugated plastic signs. (It was tested for use with the Endurance substrate, covered under FHWA acceptance letter WZ-59.) The X-552b has additionally been accepted with the following sign substrates:

48x60, 48x48 or smaller 2.0 mm ( 0.080 in) aluminum signs  
48x60, 48x48 or smaller 2 mm AL/LDPE laminated substrate signs

### **Requested Modifications**

You asked for the following modifications:

1. A1220 mm wide x 1525 mm high (48 inch x 60 inch) 10mm thick corrugated plastic (polyethylene or polypropylene) substrate sign be permitted on the X-552b stand. We concur in this request with the condition that the height of the top of the rectangular sign be at the same elevation as the top of the tested diamond shaped sign.
2. The hand-tightened thumbscrew be replaced with a hollow detent button to prevent upper mast from slipping down to a lower position. You indicated that testing you had conducted shows that the hollow detent button allows the mast to separate under impact conditions as intended. This precludes the possibility that the thumbscrew would be over-tightened which could hinder separation. We concur with this request.

### **Findings**

The modified devices described above are acceptable for use as Test Level 3 devices on the NHS under the range of conditions that the original signs were tested, when proposed by a State.

Please note the following standard provisions which apply to FHWA letters of acceptance:

- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.

- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of FHWA and NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number WZ-87A shall not be reproduced except in full. This letter, and the test documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- Eastern Metal/USA Signs stand may include patented components and if so are considered "proprietary." The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternative exists or; (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which was provided with previous correspondence.

Sincerely yours,

Frederick G. Wright, Jr.  
Program Manager, Safety